

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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|---------------------------------|---|----------------------------|
| In re Patent Application of |) | MAIL STOP AMENDMENT |
| Eugenie Charriere et al. |) | Group Art Unit: 1711 |
| Application No.: 10/682,412 |) | Examiner: RABON A SERGENT |
| Filed: October 10, 2003 |) | Confirmation No.: 3439 |
| For: METHOD FOR THE PREPARATION |) | |
| OF LOW-VISCOSITY (POLY) |) | |
| ISOCYANATES |) | |

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Jean-Marie Bernard, a citizen of France, hereby declare and state:

1. I received a doctorate degree in physicochemistry of biological and synthetic macromolecules which was conferred upon me by the University of Lille 1 in 1980.

2. I was employed by Choay from 1981 to 1986 then by Rhone Poulenc (then Aventis when Aventis acquired Rhone Poulenc Chemistry) from 1986 to 2008. I am presently employed by Perstorp and have been employed by Perstorp since October 2008. I have a total of 30 years of work and research experience in organic chemistry and especially in isocyanate chemistry. I have worked on and developed the subject matter that is described in U.S. Patent Application Serial No. 10/682,412 (the present patent application).

3. I am a co-inventor of U.S. Patent Application Serial No. 10/682,412 (the present patent application). Further, I am thoroughly familiar with the subject matter described and claimed in the present patent application.

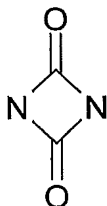
4. The present application claims a low-viscosity polyfunctional isocyanate composition comprising at least one uretinedione isocyanate dimer and at least one trimer having a biuret function, wherein said biuret function containing trimer represents at least 10% by weight based on the weight of the composition and the ratio (mass/mass) of true dimer units/total of the composition is less than 15 %.

5. The Examiner considers that EP 325941 discloses the polyfunctional isocyanate composition of the invention. EP 325941 relates to the preparation of polyisocyanates comprising biuret and uretinedione groups (p. 2, l. 29-30). However, EP 325941 does not disclose a composition with a ratio (mass/mass) of true dimer units/total of the composition of less than 15 %.

6. The calculations provided below show that, for the examples in EP 325941, the ratio of true dimer units to the total composition is always greater than 15 % on a mass/mass basis, which is outside the range required by the instant claims.

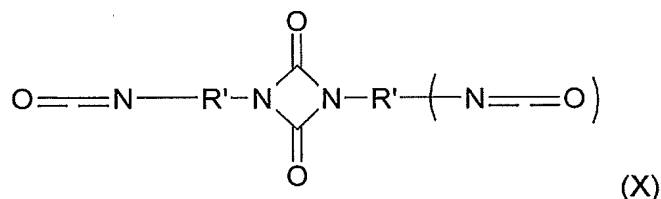
7. These calculations have been made by using the uretinedione content of each example. The calculations are the same for all the examples of EP 325941 and are explained below in relation with example 2.

8. Example 2 indicates that the uretinedione content in the composition is 13% by weight. As indicated in page 4 (l. 32) of EP 325941, the uretinedione units are of formula:



Thus a uretinedione unit has a molecular weight of 84 g/mol ($2 \times 14 + 2 \times 16 + 2 \times 12$). Since the composition of example 2 comprises 13% by weight of uretinedione, we can conclude that for 100 g of composition there are 13 g of uretinedione and therefore 0.155 mol of uretinedione ($13/84$).

9. As mentioned in the specification of the present invention, the true dimer is a compound of formula X:



10. Assuming that the whole amount of uretinedione groups in the product of EP 325941 corresponds to true dimer HDI (compound of formula X with R' represents C_6H_{12}) which has a molecular weight of 336 g/mol ($4 \times 16 + 4 \times 14 + 16 \times 12 + 24$) there are thus (0.155×336) 52g of HDI dimer in 100g of composition. Consequently, the ratio of HDI uretinedione (true dimer)/total amount of composition is of 52%.

11. Since the composition of example 2 represents 370 g, it is also possible to calculate the total amount of HDI dimer in the final composition $((52 \times 370)/100)$ that is to say 192.4 g.

12. In the table below, the values of the uretinedione content in percentage of the total composition, the number of uretinedione moles for 100g of final product,

the weight (in g) of HDI uretinedione in the final product and the ratio HDI uretinedione/total composition are listed for examples 2 to 7.

| Example | 2 | 3 | 4 | 5 | 6 | 7 |
|--|-------|--------|-------|--------|-------|-------|
| Uretinedione content ($C_2N_2O_2$) in the final product (% weight ratio) | 13 | 12 | 5 | 11 | 8 | 10 |
| Number of uretinedione moles for 100g of final product | 0.15 | 0.14 | 0.06 | 0.13 | 0.10 | 0.12 |
| Weight (in g) of HDI uretinedione in the final product | 192.4 | 264.48 | 135 | 163.68 | 120 | 119.6 |
| Ratio HDI uretinedione / total amount of isocyanate compounds (%) | 52.00 | 48.00 | 20.00 | 44.00 | 32.00 | 40.00 |

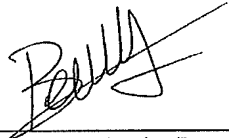
13. Those calculations show that the ratio of true dimer units to the total composition in EP 325941 is 20% or greater on a mass/mass basis.

14. As mentioned in the specification of the application, a ratio less than 15% enables to obtain a final product which is stable.

15. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and/or imprisonment under Section 1001 of Title 18 of the United States Code, and that such willful false

statements may jeopardize the validity of the application or any patent issuing
therefrom.

Date 17 mai 2011



Jean-Marie Bernard